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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/746,692	12/21/2000	Nadim Khlal	SC0815ET	9801

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EXAMINER
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LE, NHAN T

ART UNIT	PAPER NUMBER
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2685

DATE MAILED: 07/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/746,692

Applicant(s)

KHLAT ET AL.

Examiner

Nhan T Le

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 December 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16, 18, 19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15, 16, 18 and 19 is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>8</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 2, 3, 4, 7, 9, 10, 11, 12, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Myer et al (US 5,745,846) in view of Dent (US 5,668,837).

As to claims 1, 9, Myer teaches a receiver apparatus for detecting and demodulating radio signals carrying information which has been encoded and modulated onto a carrier comprising: means for subdividing the detected band into sub-bands (see fig. 2, number 38, col. 3, lines 21-37), means for superimposing the sub-bands into a plurality of components with a bandwidth similar to the bandwidth of the sub-bands (see fig. 2, number 40, col. 3, lines, lines 43-56), means for processing that portion of the information contained in each component separately (see fig. 2, number 40, lines 43-56), and means for combining the processed information from the components to reconstruct the original information transmitted (see fig. 2, number 52, col. 4, lines 46-65). Myer fails to teach a dual mode communications receiver for detecting and demodulating radio signals carrying information which has been encoded and modulated onto a carrier of either wide or narrow bandwidth for transmission. Den teaches a dual mode communications receiver for detecting and demodulating radio signals carrying information which has been encoded and modulated onto a carrier of

either wide or narrow bandwidth for transmission (see fig. 1, number 2, col. 3, lines 18-37). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Dent into the system of Myer in order to receive both wideband radio signals and narrowband radio signals.

As to claims 2, 10, Myer teaches communications receiver as set forth in claim 1 wherein the means for dividing the detected band into sub-bands comprises mixing the radio signal with a single local oscillator output to downconvert the radio signal to the frequency at which the processing is to occur (see col. 3, lines 43-56). Myer fails to teach the downconverted signal subsequently dividing into components with bandwidth equal to the sub-bands for independent and simultaneous processing. Dent teaches the downconverted signal subsequently dividing into components with bandwidth equal to the sub-bands for independent and simultaneous processing (see col. 8, lines 7-28). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Dent into the system of Myer in order to process the radio signals efficiently.

As to claims 3, 11, Myer teaches a communications receiver as set forth in claim 1 wherein the means for dividing the detected band into sub-bands comprises mixing the radio signal with a single local oscillator output to downconvert the radio signal to an intermediate frequency (see col. 3, lines 56-67, col. 4, lines 1-8). Myer fails to teach the downconverted signal subsequently dividing into components with bandwidth equal to the sub-bands for independent and simultaneous processing. Dent teaches the downconverted signal subsequently dividing into components with bandwidth equal to

the sub-bands for independent and simultaneous processing (see col. 8, lines 7-28).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Dent into the system of Myer in order to process the radio signals efficiently.

As to claims 4, 12, the combination of Myer and Dent teaches a communications receiver as set forth in claim 2 wherein the means for dividing the detected band into components with bandwidth equal to the sub-bands further comprises mixing the downconverted signal with locally generated signals to produce the components (see Myer fig. 2, Y1..Yn, col. 3, lines 43-47).

As to claims 7, 13, the combination of Myer and Dent teaches a communications receiver as set forth in claim 4 wherein the means for processing that portion of the information contained in each of the components with bandwidth equal to the sub-bands comprises an analog to digital converter (see Dent col. 8, lines 7-24).

2. Claims 5, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Myer et al (US 5,745,846) in view of Dent (US 5,668,837) and in further view of Kang (US 6,028,850).

As to claims 5, 6, the combination of Myer and Dent fails to teach a communications receiver as set forth in claim 4 where the mixing with the locally generated signals uses multiplier DAC's with the digital input driven by the low frequency digital local oscillator signals; where the multiplier DAC's provide Gain Control for Automatic Gain Adjustment. Kang teaches a communications receiver where the mixing with the locally generated signals uses multiplier DAC's with the digital input

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driven by the low frequency digital local oscillator signals; where the multiplier DAC's provide Gain Control for Automatic Gain Adjustment (see fig. 3, numbers 334b, 334c, col. 4, lines 39-52). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Kang into the system of Myer and Dent in order to adjust the receiving gain to accommodate the wide variation in the receiver power of the input signal.

3. Claims 8, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Myer et al (US 5,745,846) in view of Dent (US 5,668,837) and in further view of Martin et al (US 6,160,859).

As to claims 8, 14, the combination of Myer and Dent fails to teach a communications receiver as set forth in claim 7 wherein the analog to digital converter is a sigma-delta analog to digital converter with a programmable oversampling ratio for Wideband or Narrow band conversion. Martin teaches a communications receiver wherein the analog to digital converter is a sigma-delta analog to digital converter with a programmable oversampling ratio for Wideband or Narrow band conversion (see col. 2, lines 62-67, col. 3, lines 1-19). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Martin into the system of Myer and Dent in order to offers a multiple bandwidth option as well as providing reduced power consumption when lower bandwidth mode(s) are selected.

***Allowable Subject Matter***

4. Claims 15, 16, 18-19 are allowed.

Regarding claim 15, Myer et al (US 5,745,846) teaches channelized apparatus for equalizing carrier powers of multicarrier signal, Dent (US 5,668,837) teaches dual mode radio receiver for receiving narrow band and wideband signals, Smith et al (US 5,815,525) teaches multiband, multimode spread spectrum communication system, Martin et al (US 6,160,859) teaches integrated multimode bandpass sigma delta receiver subsystem with interference mitigation and method of using the same, Kang (US 6,028,850) teaches wireless transceiver and frequency plan. The teaching of these prior arts either combined or alone fails to teach means for converting the wide band carrier to baseband in I and Q components, each component having a bandwidth of  $BW/2$ , means for converting the I and Q components into further I and Q components to form components II, IQ, QI, and QQ, where each of the components has a bandwidth  $BW/4$  and may contain a portion of the originally transmitted information, means operable in a wideband mode for separately processing each of the subcomponents to extract portions of the originally transmitted information, means operable in a narrowband mode for separately processing each of the subcomponents containing information within the narrowband transmitted carrier to extract portion of the originally transmitted information, mean for recombining the extract information to reconstruct the originally transmitted information.

Regarding claim 16, Myer et al (US 5,745,846) teaches channelized apparatus for equalizing carrier powers of multicarrier signal, Dent (US 5,668,837) teaches dual mode radio receiver for receiving narrow band and wideband signals, Smith et al (US 5,815,525) teaches multiband, multimode spread spectrum communication system,

Martin et al (US 6,160,859) teaches integrated multimode bandpass sigma delta receiver subsystem with interference mitigation and method of using the same, Kang (US 6,028,850) teaches wireless transceiver and frequency plan. The teaching of these prior arts either combined or alone fails to teach means for converting the wide band carrier to baseband in I and Q components, each component having a bandwidth of  $BW/2$ , means for converting the I and Q components into further I and Q components to form components II, IQ, QI, and QQ, where each of the components has a bandwidth  $BW/4$  and may contain a portion of the originally transmitted information, in a wideband mode separately processing each of the subcomponents to extract portions of the originally transmitted information, in a narrowband mode separately processing each of the subcomponents containing information within the narrowband transmitted carrier to extract portion of the originally transmitted information, mean for recombining the extract information to reconstruct the originally transmitted information, and where the paths of two components are disabled in Narrow band mode.

Dependent claims 18-19 are allowable for the same reason.

### ***Response to Arguments***

5. Applicant's arguments with respect to claims 1-16, 18, 19 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nhan T Le whose telephone number is 703-305-4538. The examiner can normally be reached on 08:00-05:00 (Mon-Fri).




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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on 703-305-4385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Nhan Le

 7/12/04  
**QUOCHIEN B. VUONG**  
**PRIMARY EXAMINER**